Attorney Docket No: PAT-01174/BC1-0081

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant	:	Bernd Biallas	: Group:	1792
Serial No.	:	10/598,180	: Examiner:	Ryan Raymond Schiro
Filed	:	August 21, 2006	: Confirmation No.	1966
Title	:	METHOD FOR PRODUCING A MULTILAYERED FILM F AND USE THEREOF		

BRIEF ON APPEAL

Mail Stop Appeal Brief – Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Subsequent to the filing of the Notice of Appeal dated November 6, 2009 and acknowledged by the OIPE, Appellants now submit a brief in support of the appeal in response to the Final Rejection set forth in the Office Action dated August 6, 2009.

TABLE OF CONTENTS

I. Real Party in Interest

The present application is assigned to BASF COATINGS AG. of Münster, Germany.

II. Related Appeals and Interferences

The undersigned, the Assignee, and the Appellants do not know of any appeals or interferences which would directly affect or that would be directly affected by, or have a bearing on, the Board's decision in this Appeal.

III. Status of the Claims

Claims 1-26 are reproduced in the attached Claims Appendix as the claims which are being appealed. Each of these claims is currently pending in this application.

IV. Status of the Amendments

The Advisory Action of November 3, 2009 indicated that the amendment after final rejection, filed on October 9, 2009 and containing an amendment of claim 25, would be entered for purposes of appeal.

V. Summary of the Claimed Subject Matter

The present invention relates to a process for producing a deformable coated multilayer basecoat/clearcoat sheet. Such sheets are used by stretching and affixing them to three-dimensional substrates as an alternative to direct application of multiple layers of coating compositions to the three-dimensional substrate. Because the layers on such sheets are subject to stretching, thinning, and other deformations when the sheet is affixed to the three-dimensional

substrate, they are generally applied onto the sheet with greater thicknesses than layers that are applied directly onto the three-dimensional substrate in order to provide the desired base/clear visual effect (see application at page 5, lines 7-17). However, the thicknesses of the layers, combined with the physical deformation they undergo when the sheet is applied to a three-dimensional substrate causes a number of problems (e.g., mechanical damage, delamination, color irregularities, pinholes and pops, adhesion problems, durability of the final coating, and sinking of the clearcoat) when the sheets are prepared with conventional coating techniques (see application at page 5, line 17 – page 8, line 8). Appellants have discovered that following a particular drying and cooling regimen, as set forth in the claimed invention, can effectively mitigate these problems.

Claim 1 is an independent claim directed to a process for producing a multilayer sheet S in which a pigmented basecoat material is applied to a carrier sheet to give a wet basecoat film 1a, followed by adjusting the residual volatiles content of the wet basecoat film to less than 10% by weight to give a conditioned basecoat film 1b (lines 15-18 of page 13; lines 23-26 of page 23). The carrier sheet with conditioned basecoat film 1b is then adjusted to a surface temperature of less than 50°C to give a temperature-adjusted basecoat film 1b (lines 21-23 of page 13; page 25, line 28 – page 26, line 3). A second pigmented basecoat material may optionally be applied to the temperature-adjusted basecoat 1b to give a wet basecoat film 2a, followed by adjusting the residual volatiles content of the wet basecoat film 2a to less than 10% by weight to give a conditioned basecoat film 2b (page 13, line 25 – page 14, line 4; lines 7-13 of page 26). If appropriate (i.e., in the case where the second basecoat was in fact applied, see lines 6-8 of page 28), the carrier sheet with conditioned basecoat films 1b and 2b is again adjusted to a

surface temperature of less than 50°C to give a temperature-adjusted basecoat film 2b (lines 6-9 of page 14; lines 6-12 of page 28). Finally, a clearcoat material is applied to the temperature-adjusted basecoat film 1b or 2b to give a wet clearcoat film 3a, followed by adjusting the residual volatiles content of the wet clearcoat film 3a to less than 5% by weight to give a conditioned deformable clearcoat film 3b (lines 11-16 of page 14; lines 16-20 of page 28). Subsequent to adjusting the volatiles content, the clearcoat film 3b is cured thermally or with actinic radiation, e.g., after the multilayer sheet S has been conformally joined to a three-dimensional substrate (lines 15-17 of page 14; page 31, line 8 – page 32, line 2, claim 18).

Claim 25 is an independent claim directed to a process for producing a multilayer sheet S in which a pigmented basecoat material is applied to a carrier sheet to give a wet basecoat film 1a, followed by flashing off the basecoat film 1a for 1 to 6 minutes at ambient temperature, humidity, and airspeed (lines 17-23 of page 24), and then adjusting the residual volatiles content of the wet basecoat film to less than 10% by weight to give a conditioned basecoat film 1b (lines 15-18 of page 13; lines 23-26 of page 23). The carrier sheet with conditioned basecoat film 1b is then adjusted to a surface temperature of less than 50°C using chill rolls to give a temperature-adjusted basecoat film 1b (lines 21-23 of page 13; page 25, line 28 – page 26, line 3; lines 17-19 of page 34). A second pigmented basecoat material may optionally be applied to the temperature-adjusted basecoat 1b to give a wet basecoat film 2a, followed flashing off the basecoat film 2a for 1 to 6 minutes at ambient temperature, humidity, and airspeed (lines 21-26 of page 26), and then by adjusting the residual volatiles content of the wet basecoat film 2a to less than 10% by weight to give a conditioned basecoat film 2b (page 13, line 25 – page 14, line 4; lines 7-13 of page 26). If appropriate (i.e., in the case where the second basecoat was in fact

applied, see lines 6-8 of page 28), the carrier sheet with conditioned basecoat films 1b and 2b is again adjusted to a surface temperature of less than 50°C using chill rolls to give a temperature-adjusted basecoat film 2b (lines 6-9 of page 14; lines 6-12 of page 28; lines 1-3 of page 36). Finally, a clearcoat material is applied to the temperature-adjusted basecoat film 1b or 2b to give a wet clearcoat film 3a, followed by flashing off the clearcoat film 3a for 2 to 8 minutes at ambient temperature, humidity, and airspeed (lines 1-6 of page 29), and then adjusting the residual volatiles content of the wet clearcoat film 3a to less than 5% by weight to give a conditioned deformable clearcoat film 3b (lines 11-16 of page 14; lines 16-20 of page 28). Subsequent to adjusting the volatiles content, the clearcoat film 3b is then cured thermally or with actinic radiation, e.g., after the multilayer sheet S has been conformally joined to a three-dimensional substrate (lines 15-17 of page 14; page 31, line 8 – page 32, line 2).

VI. Grounds of Rejection to be Reviewed on Appeal

Appellants seek the Board's review of the rejection of:

1. Claims 1-8, and 10-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0175572 A1 to Hintze-Bruning et al., hereafter "Hintze-Bruning" in view of U.S. Patent No. 5,011,881 to Fujii et al., hereafter "Fujii".

2. Claim 9 under 35 U.S.C.§103 (a) as being unpatentable over Hintze-Bruning in view of Fujii further in view of Steininger et al. (US 2004/0208998).

VII. Argument

A. Rejection of claims 1-8 and 10-26

Claims 1-8, and 10-26 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent Application 2004/0175572 A1 to Hintze-Bruning et al., hereafter "Hintze-Bruning" in view of U.S. Patent No. 5,011,881 to Fujii et al., hereafter "Fujii".

1. Claims 1 and 25 (along with their dependent claims 2-24 and 26) are patentable over the cited references.

a. One of ordinary skill in the art would not have combined the references as argued by the Examiner.

Hintze-Bruning discloses a process for preparing a multilayer color and/or effect film that is prepared by (1) continuously applying a layer of basecoat material to a carrier sheet with the pigment anisotropically distributed in the layer, (2) applying a second layer of basecoat material on top of the first basecoat layer with the pigment isotropically distributed in the layer, and (3) drying the resulting coating (paragraphs [0019]-[0030]). A clearcoat may be applied on top of the two basecoat layers (paragraphs [0105]-[0118]).

The Examiner acknowledges that Hintze-Bruning fails to disclose the essential process steps of Appellants' claimed invention of adjusting the residual volatiles content of a first basecoat to less than 10% by weight, adjusting the surface temperature of the first basecoat to less than 50°C, adjusting the residual volatiles content of the second basecoat to less than 10% by weight, adjusting the surface temperature of the second basecoat to less than 50°C, and adjusting the residual volatiles content of the clearcoat to less than 5% by weight, all prior to curing thermally or with actinic radiation. The Examiner cites Fujii for its disclosure regarding separate drying steps for a basecoat and a clearcoat, at various temperatures, prior to curing.

It is well-settled law that a determination of obviousness based on a combination of references should be supported with reasoning as to why one skilled in the art would make the combination. *See KSR v. Teleflex*, 550 U.S. 395, 418 (2007). In the present case, the Examiner asserts that

> [i]n this case one would be motivated to combine Hintze-Bruning with Fujii because both teachings are drawn to coatings to be used for body panels of motor vehicles which have no solvent or a low solvent content due to environmental concerns. Fujii teaches the advantage that its method is better than a two coat one bake method, which is the type of method taught by Hintze-Bruning, because it provides surface smoothness, distinctness of image gloss and weatherability better than such a coating (Fujii col. 1, lines 52-60).
> (*Office Action of 8/6/09, para. spanning pp. 6 and 7*)

Appellants first point out that the Examiner's characterization of Fujii as directed to some sort of unique coating *process*, which offers advantages that would provide motivation to use those process features (like drying techniques) in other applications, is inaccurate. When the full text of the quoted text of Fujii is examined, it is clear that the Examiner's contention is not supported:

> [An] object of the present invention is to provide a *novel aqueous thermoplastic coating composition* for coating plastics substrates and capable of giving a coating which has surface smoothness, distinctness-of-image gloss and weatherability comparable to or higher than when formed by the two-coat one-bake method *using a conventional* organic solvent-diluted thermosetting base-coat composition . . . . (emphasis added)
> *Fujii at col. 1, lines 52-59*

Fujii clearly does *not* teach that their coating process is in any way unique or that the invention is even directed to process methodology. They acknowledge at col. 1, lines 19-20 that the two-coat one-bake method is known in the art, but they also use the two-coat one-bake method themselves (see col. 2, lines 25-26, "curing . . . the two coatings at the same time"). The cited portion at col. 1, lines 52-59 is simply stating that *when* the two-coat one-bake method is

used, their novel composition provides the described advantages. In other words, Fujii's stated advantages derive from the composition, not process methodology such as drying. Accordingly, Appellants submit that one skilled in the art would not find any motivation in the references to combine the teaching of Fujii regarding drying with Hintze-Bruning. To the contrary, Appellants submit that there are significant differences in the conditions to which the coatings of Fujii and Hintze-Bruning are subjected, namely the fact that Fujii's coatings are applied to relatively rigid and dimensionally-stable 3-D substrates (col. 6, lines 64-68) whereas Hintze-Bruning's coatings are applied to a carrier sheet that is subsequently stretched and deformed when applied to a 3-D. In view of these significant differences, Appellants submit that one of ordinary skill in the art would not expect the relatively obscure teaching of Fujii regarding drying of coatings, which is ancillary to their disclosed invention, to offer any particular benefit if used in the deformable coated carrier sheet of Hintze-Bruning.

In response to Appellants' position that the cited references fail to provide motivation for their combination, the Examiner argues that

> . . . Hintze-Brunning teaches a film forming method for making a sheet and Fujii teaches a direct application method to the substrate, the fact that Appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. *See Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In this case, it would be obvious to a person ordinarily skilled in the art to modify a direct application method to make a sheet instead because a sheet containing the coating composition could be easily applied to the substrate or could be attached to a substrate which can be molded into the desired part at a latter time and may be used for a plurality of different parts.
>
> (*Office Action of 8/6/09, p. 7, first full para.*)

The Examiner's argument here is misplaced on two points. First, the cited portion of *Ex parte Obiaya* is directed not to the issue of whether one skilled in the art would combine references, but to the issue of whether a newly-discovered advantage determined to be inherent in the prior art can be relied on as an unexpected result to support unobviousness. Second, the assertion that one of ordinary skill in the art would be motivated to apply the drying disclosure of Fujii to the deformable sheets of Hintze-Bruning because it is known that sheets can be applied to 3-D substrates ignores the fundamental issue, which is why would one look to the drying disclosure of Fujii to teach anything about how to prepare the deformable sheets of Hintze-Bruning? Although the Supreme Court held in *KSR* that it is permissible to combine references that address different problems in order to achieve *predictable* results, the Examiner has failed to show what predictable results one skilled in the art would hope to achieve by looking to Fujii's ancillary disclosure on drying of coatings for use in preparation of Hintze-Bruning's deformable sheets. The Examiner has argued that it is known that drying temperature will directly affect volatiles content (8/6/09 Office Action, middle of page 4), but this ignores the critical question of why one of ordinary skill in the art would in the first place seek adjust the volatiles content of Hintze-Brunning's coatings. Hintze-Brunning, by its silence, implicitly teaches that residual volatiles content is not critical to performance of their formable coated sheets for application onto 3-D substrates. Why then would one skilled in the art look to Fujii's disclosure on coatings for rigid substrates for drying conditions to be used on coatings for deformable sheets? No reason has been provided, and Appellants submit that one of ordinary skill in the art would not look to Fujii and would not combine the references as urged by the Examiner.

b. Even assuming that Hintze-Bruning and Fujii were properly combinable, the resulting combination does not yield Appellants' claimed invention.

i. Neither Hintze-Bruning nor Fujii disclose Appellants' claim limitations directed to adjusting residual volatiles content and surface temperature.

It is well-settled law that a case a *prima facie* case of obviousness must establish that he prior art reference (or references when combined) must teach or suggest all the claim limitations. See, e.g., *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003); *In re Royka*, 490 F.2nd 981, 985 (C.C.P.A. 1974). In the present case, of the three important limitations (adjusting volatiles content of basecoat, adjusting temperature of basecoat, and adjusting volatiles content of clearcoat), neither Hintze-Bruning nor Fujii discloses a single one of these.

Taking these limitations one by one, the Board's attention is first directed to the claim requirement of first adjusting the volatiles content of the basecoat to less than 10% by weight. As acknowledged by the Examiner, Hintze-Bruning is silent with regard to residual volatiles content of the coated layers. Fujii discloses at lines 18-19 of col. 7 drying a basecoat with hot air to reduce the water content to 25% by weight or lower. In Example 4 at col. 11, line 2, Fujii discloses drying a basecoat with hot air to reduce the water content to 20% by weight. Nowhere does the reference disclose reducing volatiles content of a basecoat to less than 10% by weight as required by Appellants' claimed invention.

The references also fail to disclose the second important feature of Appellants' claimed invention, adjusting the temperature of the volatiles-reduced basecoat to less than 50°C. Hintze-Bruning is silent with regard to cooling the basecoat after drying. Fujii makes no general disclosure about cooling the basecoat before overcoating with the clearcoat, although there is a single

disclosure in a working example (Example 4 at col. 11, line 1) where the reference discloses cooling a coated element to room temperature before applying a clearcoat. However, a closer look at the disclosure of this working example reveals that element was coated with ***two*** layers of basecoat followed by drying and cooling prior to applying the clearcoat. Appellants' claims provide that a second basecoat layer is optional; however, when the claims are read onto the two-layer basecoat of Fujii Example 4, it is clear that Fujii does not disclose Appellants' required claim element of adjusting the first basecoat for both volatiles and temperature ***before*** the second basecoat is applied. Appellants' second basecoat, when applied, is separately adjusted for volatiles and temperature in subsequent steps (c) and (d). Fujii et al. does not adjust the first basecoat's volatiles content to less than 10% or adjust the temperature to less than 50°C before applying the second basecoat, merely allowing it to "set for 2 minutes before the second application" (col. 10, lines 60-62). This set-up period is referred to in the art as flash-off, and is distinguished from any significant volatiles adjustment (see Appellants' claim 25). Thus, the only disclosure cited by the Examiner of temperature adjusting a basecoat temperature before applying a clearcoat is a two-basecoat example that fails to disclose adjusting the first basecoat temperature before applying the second basecoat, as required by Appellants' claimed invention.

Similar to the cited references' failure to disclose temperature-adjusting a first basecoat temperature before applying a second basecoat when such second basecoats are applied over the first basecoat, neither reference discloses adjusting the residual volatiles content of a first basecoat to less than 10% before applying a second basecoat. Hintze-Bruning is directed to two-layer basecoats, and discloses drying only after application of the second basecoat (see abstract, step (3)).

As discussed above, the only disclosure by Fujii (Example 4) of a two-layer basecoat fails to dry the first basecoat before applying a second basecoat, as required by Appellants' claimed invention.

The third feature referenced above regarding Appellants' claimed invention is to adjust the volatiles content of the clearcoat to less than 5% by weight before curing. Similar to the arguments regarding adjusting the volatiles content of the basecoat, the Examiner simply asserts, with minimal supporting analysis, that Fujii's disclosure somehow makes it obvious to adjust the clearcoat volatiles content to less than 5% as claimed by Appellants. However, a closer examination of Fujii reveals that there is no disclosure of reducing volatiles content of the clearcoat to Appellants' claimed 5% level. Fujii discloses at col. 7, lines 23-27 that after application of the clearcoat, "the coated plastics substrate is set in a usual manner and then heated at a temperature lower than about 120°C, preferably about 40°C to about 120°C, to cure the clear coating or the two coatings at the same time. In Example 4 at col. 11, lines 5-7, Fujii states that the "coating was allowed to set for 5 minutes, dried and cured at 80° to 90°C for 30 minutes." It is unclear whether Fujii intends that drying and curing are to occur simultaneously during the heating at 80° to 90°C for 30 minutes or whether by "drying", the reference means reducing the volatiles to 20% volatiles as was done for the double-layer basecoat, but one thing that is clear is that the reference does not disclose or suggest adjusting the volatiles content of the clearcoat to less than 5% by weight before curing it, as required by Appellants' invention.

ii. <u>One of ordinary skill in the art would not modify the disclosures of Hintze-Bruning and Fujii to arrive at Appellants' claim limitations directed to adjusting residual volatiles content and surface temperature.</u>

The Examiner, citing *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980), asserts that because residual volatiles content is dependent on drying temperature and because Fujii discloses a range of drying temperature, it would be obvious for one skilled in the art to modify drying temperature in such a way as to arrive at Appellants' claimed less than 10% residual volatiles content. Appellants disagree.

In re Boesch is completely distinguishable from the present case. Appellants note that *Boesch* refers to "result effective variables", not "cause effective variables" as cited by the Examiner. Appellants further note that in *Boesch*, the 'variable' is a variable set forth in the claim (in *Boesch*, the 'N v value parameter'), and the 'result' is an advantageous result purportedly produced by optimization of that variable (in *Boesch*, the avoidance of precipitation of embrittling phases of metal alloys). In the present case, the Examiner has mis-applied *Boesch* by adopting the 'result' as Appellants claim element of residual volatiles content (reduced to less than 10% for the basecoat and less than 5% for the clearcoat), and arguing that the 'variable' is any of the drying conditions (e.g., drying temperature range) disclosed in the prior art Fujii reference. The Examiner further argues that it would be obvious "to obtain the specified volatiles contents simply by optimizing the drying process" (8/6/09 Office Action, end of paragraph bridging pages 7-8). This argument of course begs the question – optimize for what reason; to obtain what result? No answer has thus far been provided.

Appellants submit that the standard of *In re Boesch*, when properly applied to Appellants' claimed invention, would view the basecoat residual volatiles content (reduced to less than 10%) as the variable, and the advantageous results reported in Appellants' working example (e.g., maintaining color flop and physical integrity when the coated film is stretched onto a 3-dimensional part, see page 15, line 10 – page 17, line 22; page 31, line 24 – page 32, line 2; and page 37, lines 23-26) as the result. In *Boesch*, the court held that discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art when the "prior art would have suggested the kind of experimentation necessary to achieve the composition". In *Boesch*, the court found that it was already known in the art that higher values for the claimed 'N v value' parameter would reduce the chance for precipitation of embrittling metal alloy phases. No such suggestion of expected results is found in the prior art cited by the Examiner in the instant case. As mentioned above with respect to the propriety of combining the references, the Examiner (citing *Ex parte Obiaya*), argued that the fact that Appellant has recognized *another* advantage that would flow naturally from following the suggestion of the prior art cannot be the basis for patentability (see 8/6/09 Office Action, middle paragraph of p. 7). However, the Examiner never identifies what the naturally flowing advantage is supposed to be that would motivate the skilled artisan to select the specific processing parameters specified in Appellants' claimed invention.

In the present case, no teaching has been shown that would support an expectation that reducing volatiles content of a basecoat to less than 10% by weight before coating a clearcoat onto a carrier film could provide better color and physical stability when that film is applied to complex 3-dimensional shapes, as discovered by Appellants. Instead, the Examiner simply asserts, without supporting analysis, that by 'optimizing' to achieve some unspecified result, one skilled in the art

would be led to arrive at Appellants' invention by modifying (i.e., increasing) the drying temperature within Fujii's disclosed range while apparently holding the drying time constant or increasing it (note that although the Examiner does not articulate this assumption of manipulating multiple drying variables, it is implicit in the Examiner's conclusion that one would inevitably arrive at the lower volatiles content required by Appellants' claims). Appellants submit that such unsupported reasoning does not support a conclusion of obviousness.

The facts of the present case much more closely match those of *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977), which held there is no motivation to optimize a parameter when there is no art recognition that the variable was important in determining the result achieved by the invention. In Antonie, the claimed invention involved selection of a certain ratio of tank volume to contactor area to provide improved treatment capacity of a wastewater treatment apparatus. The Examiner had cited a prior art reference that disclosed adjusting contactor area while keeping throughput constant in order to maximize treatment capacity. The Examiner argued that there was an implicit assumption that such manipulation would be performed while also holding the tank volume constant, so that routine optimization would lead to the Appellant's claimed ratio. The court reversed, holding that the prior art did not teach that the tank volume (or its relationship to contactor area) was in any way relevant to treatment capacity. This is similar to the present case on two points. Here, like *Antonie*, the Examiner argues that one skilled in the art would manipulate (i.e., increase) drying temperature while assumedly holding constant (or increasing) other factors like drying time in order to arrive at volatiles contents lower than those disclosed by Fujii. And, more importantly, there is no teaching or disclosure in either Hintze-Brunning or Fujii that drying

and cooling parameters are in any way important to improving the performance of coated sheets for application to 3-D substrates.

The bottom line is that a citation to a case like *In re Boesch* is no substitute for a proper obviousness analysis, the cornerstone of which should be *why* one of ordinary skill in the art would be led by the disclosures of the prior to arrive at Appellants' invention. The analysis presented by the Examiner seems to suggest that the skilled artisan would, out of idle curiosity, be led to try all sorts of drying times and temperatures at all stages of the coating process and would inevitably arrive at Appellants' claimed invention. Appellants submit that this reasoning does not support a case of *prima facie* obviousness.

2. <u>Claims 3, 5, 7, 23, and 24 are separately patentable over the cited references.</u>

Regarding claims 3, 5, 7, 23, and 24, neither Hintze-Bruning nor Fujii, alone or in combination, teach or suggest two distinct drying sections for the process for preparing a multilayer film, let alone teach that the number of distinct drying sections is a result effective variable for the desired sheet properties. Again, for a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations in these claims or a *prima facie* case of obviousness has not been made.

Claims 3, 5, and 7 recite two-stage drying sections for the basecoat films 1a and 2a, and clearcoat film 3a, respectively. Claims 23 and 24 also recite two stage drying sections for the clearcoat film 3a. The specific drying conditions for the two drying sections for basecoat films 1a and 2a, and clearcoat film 3a, are each different. For example, for basecoat film 1a, the first drying section employs an average drying rate of 10 to 40% by weight/min, based on the total

volatiles content of the applied basecoat film, until the residual volatiles content x is 12 to 30% by weight, based on the basecoat film, and the last drying section employ san average drying rate of 1 to 6% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is less than 10% by weight, based in each case on the basecoat film. Neither Hintze-Bruning nor Fujii, alone or in combination, teach or suggest two stage drying sections for the basecoat and clearcoat films. The Examiner has not provided any reasons as to why the two stage drying process recited in these claims might be obvious.

3. Claim 18 is separately patentable over the cited references.

The Examiner concedes that curing a multilayer coated sheet after joining it with a substrate is not taught by Hintze-Bruning in view of Fujii. However, the Examiner argues that

> [i]t would have been obvious to a person ordinarily skilled in the art at the time of the invention to modify the process for producing a multilayer sheet taught by Hintze-Bruning in view of Fujii to include curing the multilayer sheet after joining with a substrate, as required by claim 18. One would have been motivated to make this modification because the transposition of process steps, where the processes are substantially identical or equivalent in terms of function, manner, and result, was held to not patentably distinguish the processes. *Ex parte Rubin*, 128 USPQ 159 (PO BdPatApp 1959).
>
> *Office Action of 8/6/09 at page 5, third full paragraph*

Appellants submit that claim 18 of the present application does not involve mere transposition of process steps where the process are substantially identical or equivalent, as required by the holding in *Ex parte Rubin*. To the contrary, Hintze-Bruning's curing of the coatings prior to the stretching and deformation that accompanies attachment of the coated sheet to a 3-D substrate, and the concomitant changes in physical properties of the coatings brought about by the crosslinking that goes on during curing, would have a substantial impact on the characteristics of

those coatings during the stretching and bending to accommodate the 3-D substrate. Performing the cure operation *after* attaching the coated sheet to the substrate provides the sheet with coatings having substantially different physical properties to undergo such stretching and bending than what was offered by the prior art. Accordingly, the Examiner has not supported the *Ex parte Rubin* requirement that the processes are substantially identical or equivalent in terms of function, manner, and result, and this basis of rejection should be overturned.

4. <u>Claim 25 is separately patentable over the cited references.</u>

Claim 25 requires that the surface temperature adjustments in steps b and d are effected by using chill rolls. Hintze-Bruning is silent on surface temperature adjustments between application of coating layers and curing. Fujii is silent on using chill rolls to effect cooling. Fujii Example 4 discloses cooling a double layer basecoat to room temperature (col. 11, line 1), and contains no disclosure to indicate anything other than that such cooling was achieved by allowing the coating to stand at room temperature. Fujii does disclose low-temperature testing of the final coated product by cooling it to -30° in a cooling chamber (col. 11, lines 31-32), but this is testing of the product *after* curing whereas Appellants' claimed cooling step is performed *before* curing. Since neither reference teaches or suggests the use of chill rolls to make temperature adjustments, it is respectfully submitted that claim 25 as herein amended is not obvious over the references.

B. Rejection of claim 9

Claim 9 stands rejected under 35 U.S.C.§103(a) as being unpatentable over Hintze-Bruning in view of Fujii further in view of Steininger et al. (US 2004/0208998). Appellants

submit that since claim 9 is dependent on claim 1, it is patentable over the cited references for the same reasons set forth above with respect to claim 1.

Conclusion

As acknowledged by the Examiner, the primary Hintze-Bruning et al. reference does not disclose any of the three above-referenced features of Appellants' claimed invention involving volatiles or temperature adjustment. Furthermore, as discussed above, the secondary Fujii et al. reference also fails to disclose these features, and the Examiner has not provided any persuasive reasoning as to why one skilled in the art would modify the disclosure of Fujii et al. to arrive at the claim elements found in Appellants' invention. Of course, volatiles content of a coating is affected by drying temperature, but that alone does not answer the question of why in the first place one would seek to adjust the residual volatiles conten when, unlike the case in *Boesch*, there is no art-recognized expectation that such adjustments to volatiles content would produce the beneficial results on coated films when applied to 3-dimensional objects as discovered by Appellants. Additionally, the only teaching by the secondary Fujii et al. reference regarding cooling is of a two-layer basecoat, which is clearly outside the scope of Appellants' claims because there is no teaching of cooling (or drying) the first layer of basecoat before applying the second layer of basecoat, as required by Appellants' claimed invention for two-layer basecoats.

Appellants respectfully request that the Honorable Board of Patent Appeals and Interferences reverse the Examiner's rejection of each of pending claims 1-26. Appellants respectfully submit that the prior art does not teach or suggest one or more limitations of the claims as discussed above. Accordingly, for the aforementioned reasons, Appellants respectfully request

the Honorable members of the Board of Patent Appeals and Interferences to reverse the outstanding rejections in connection with the present application and permit each of claims 1-26 to be passed to allowance in connection with the present application.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at (248) 524- 2300.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 06-1130.

Respectfully submitted,

CANTOR COLBURN LLP

Tuesday, February 09, 2010 /MaryEGolota/

Mary E. Golota, Reg. No. 36,814
Cantor Colburn LLP
20 Church Street, 22nd Foor
Hartford, CT 06103
(248) 524-2300
(248) 524-2700 (fax)

VIII. Claims Appendix

1. A process for producing a multilayer sheet S by coating an optionally pretreated carrier sheet with

a pigmented basecoat film,

if desired, a second pigmented basecoat film, and

a clearcoat film,

the process comprising:

a. applying a pigmented basecoat material to the carrier sheet to give a wet basecoat film 1a, and adjusting the basecoat film 1a to a residual volatiles content "x" of less than 10% by weight, based on the basecoat film, to give a conditioned basecoat film 1b,

b. adjusting a surface of the conditioned basecoat film 1b to a temperature of less than 50°C, to give a temperature-adjusted basecoat film 1b,

c. if desired, applying a second pigmented basecoat material or the pigmented basecoat material to the temperature-adjusted basecoat film 1b to give a wet basecoat film 2a, and adjusting the basecoat film 2a to a residual volatiles content "y" of less than 10% by weight, based on the basecoat film, to give a conditioned basecoat film 2b,

d. if appropriate, adjusting the conditioned basecoat films 1b and 2b to a temperature of less than 50°C at a surface of the basecoat film 2b, to give a temperature-adjusted basecoat film 2b,

e. applying a clearcoat material to the temperature-adjusted basecoat film 1b or 2b to give a wet clearcoat film 3a, adjusting the clearcoat film 3a to a residual volatiles content "z" of less than 5% by weight, based on the clearcoat film, to give a conditioned, deformable clearcoat film 3b, and curing the conditioned, deformable clearcoat film 3b thermally and/or with actinic radiation.

2. The process as claimed in Claim 1, wherein the residual volatiles content in steps a., c. and/or e. is adjusted by heating and/or convection.

3. The process as claimed in Claim 1, step a. further comprising

in the first drying section, employing an average drying rate of 10 to 40% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is 12 to 30% by weight, based on the basecoat film, and

in the last drying section, employing an average drying rate of 1 to 6% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is less than 10% by weight, based in each case on the basecoat film.

4. The process as claimed in Claim 1, comprising adjusting the basecoat film 1b in step b. to a temperature of less than 35°C at the basecoat film 1b surface.

5. The process as claimed in Claim 1, wherein step c. further comprises

in the first drying section, employing an average drying rate of 10 to 40% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content y is 12 to 30% by weight, based on the basecoat film, and

in the last drying section, employing an average drying rate of 1.5 to 4% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is less than 10% by weight.

6. The process as claimed in Claim 1, comprising adjusting the basecoat film 2b in step d to a temperature of less than 35°C at its surface 2b.

7. The process as claimed in Claim 1, wherein step e. further comprises

in the first drying section, employing an average drying rate of 10 to 30% by weight/min, based on the total volatiles content of the applied clearcoat film, until the residual volatiles content z is 10 to 15% by weight, based on the clearcoat film, and

in the last drying section, employing an average drying rate of 0.5 to 3% by weight/min, based on the total volatiles content of the applied clearcoat film, until the residual volatiles content z is less than 7% by weight, based in each case on the clearcoat film.

8. The process as claimed in Claim 1, further comprising, in a step f., adjusting a surface of the clearcoat film 3b to a temperature of less than 50°C.

9. The process as claimed in Claim 1, further comprising covering a surface of the clearcoat film 3b with a protective sheet in a step g.

10. The process as claimed in Claim 1, wherein applying the basecoat material in step a. comprises applying by means of a continuous method.

11. The process as claimed in Claim 1, wherein applying the basecoat material in step c. comprises applying by means of a continuous method.

12. The process as claimed in Claim 1, wherein applying the clearcoat material in step e. comprises applying by means of a continuous method.

13. The process as claimed in Claim 1, wherein applying the basecoat material in step a. comprises applying by means of a directed application method.

14. The process as claimed in Claim 1, wherein applying the basecoat material in step c. comprises applying by means of an undirected application method.

15. The process as claimed in Claim 1, further comprising wherein a free side of the carrier sheet has been covered with an adhesion coat.

16. The use of the multilayer sheets S produced by the process as claimed in Claim 1 for producing color and/or effect films.

17. The use as claimed in Claim 16, wherein the color and/or effect films serve for the coating of substrates.

18. The use as claimed in Claim 16, further comprising, after the multilayer sheets S have been joined with substrates, converting the multilayer sheets S into color and/or effect coatings by thermal curing and/or curing with actinic radiation.

19. The use as claimed in Claim 18, further comprising stretching the multilayer sheets S before, during or after their joining to the substrates.

20. The use as claimed in Claim 17, wherein the substrates are selected from the group consisting of automobile bodies, modules, and exterior mounted components therefor.

21. The process as claimed in Claim 3, comprising, in the last drying section, employing an average drying rate of 1 to 6% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is less than 7% by weight.

22. The process as claimed in Claim 21, comprising, in the last drying section, employing an average drying rate of 1 to 6% by weight/min, based on the total volatiles content of the applied basecoat film, until the residual volatiles content x is less than 5% by weight, based in each case on the basecoat film.

23. The process as claimed in Claim 7, comprising, in the last drying section, employing an average drying rate of 0.5 to 3% by weight/min, based on the total volatiles content of the applied clearcoat film, until the residual volatiles content z is less than 5% by weight.

24. The process as claimed in Claim 23, comprising, in the last drying section, employing an average drying rate of 0.5 to 3% by weight/min, based on the total volatiles content of the applied clearcoat film, until the residual volatiles content z is less than 3% by weight.

25. A process for producing a multilayer sheet S by coating an optionally pretreated carrier sheet with

a pigmented basecoat film,

if desired, a second pigmented basecoat film, and

a clearcoat film,

the process comprising:

a. applying a pigmented basecoat material to the carrier sheet to give a wet basecoat film 1a, flashing off the basecoat film 1a for 1 to 6 minutes at a temperature, humidity, and airspeed prevailing during application of the pigmented basecoat material, and adjusting the basecoat film 1a which is adjusted to a residual volatiles content "x" of less than 10% by weight, based on the basecoat film, to give a conditioned basecoat film 1b,

b. adjusting a surface of the conditioned basecoat film 1b to a temperature of less than 50°C using chill rolls, to give a temperature-adjusted basecoat film 1b,

c. if desired, applying a second pigmented basecoat material or the pigmented basecoat material to the temperature-adjusted basecoat film 1b to give a wet basecoat film 2a, flashing off the basecoat film 2a for 1 to 6 minutes at a temperature, humidity, and airspeed prevailing during application of the pigmented basecoat material, and adjusting the basecoat film 2a to a residual volatiles content "y" of less than 10% by weight, based on the basecoat film, to give a conditioned basecoat film 2b,

d. if appropriate, adjusting the conditioned basecoat films 1b and 2b using chill rolls to a temperature of less than 50°C at a surface of the basecoat film 2b, to give a temperature-adjusted basecoat film 2b,

e. applying a clearcoat material to the temperature-adjusted basecoat film 1b or 2b to give a wet clearcoat film 3a, flashing off the clearcoat film 3a for 2 to 8 minutes at a temperature, humidity, and airspeed prevailing during application of the clearcoat material, adjusting the clearcoat film 3a to a residual volatiles content "z" of less than 5% by weight, based on the clearcoat film.

26. The process as claimed in Claim 1, wherein

the residual volatiles content "x" of the wet basecoat film 1a. is adjusted at a temperature of 30 to 100°C, a humidity of 3 to 15 g/kg, and an airspeed of 0.2 to 15 m/s for 1 to 10 minutes;

the residual volatiles content "y" of the wet basecoat film 2a is adjusted at a temperature of 30 to 100°C, a humidity of 3 to 15 g/kg, and an airspeed of 0.2 to 15 m/s for 1 to 10 minutes; and

he residual volatiles content "z" of the wet clearcoat film 3a is adjusted at a temperature of 80 to 140°C.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

None.